

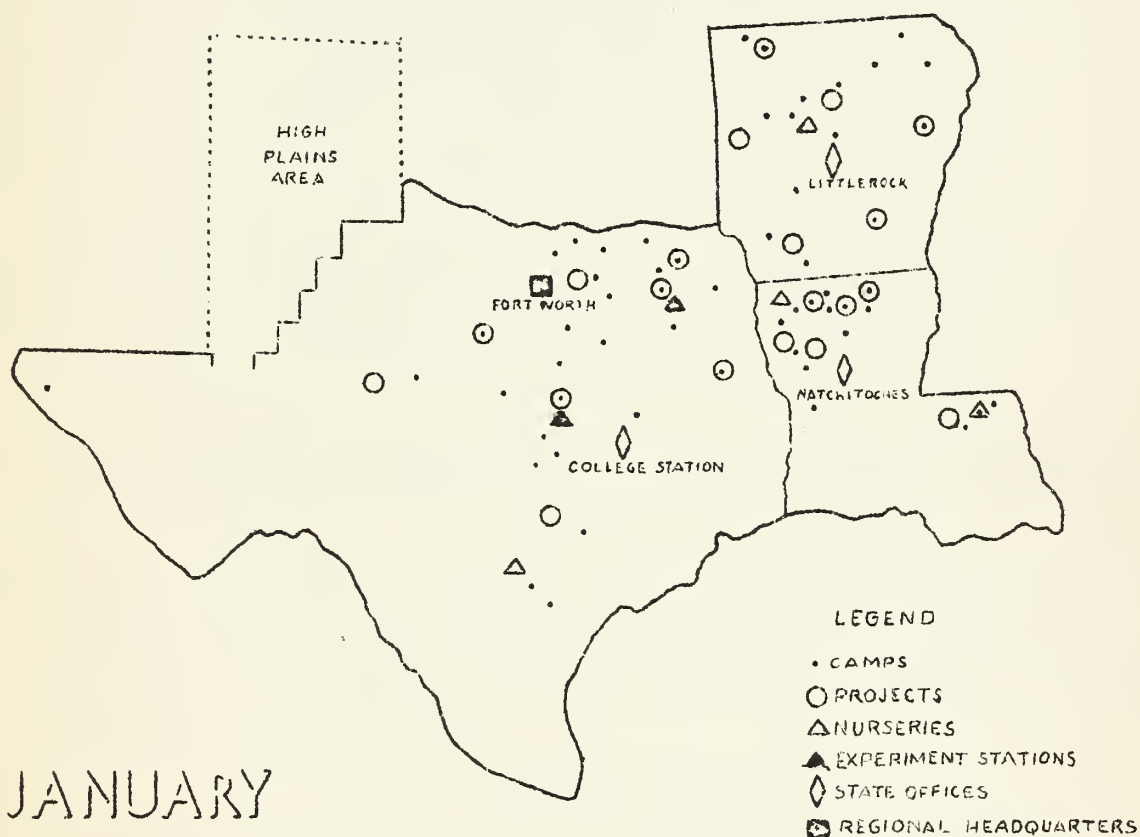
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# SOIL CONSERVATION SERVICE

## NEWS



JANUARY

REGION 4  
COMPRISING STATES OF LOUISIANA  
ARKANSAS, AND TEXAS EXCEPT  
HIGH PLAINS AREA



RELATIVE COST AND EFFECTIVENESS OF DIFFERENT  
METHODS OF TERRACE OUTLET CONTROL

By

Howard Matson,  
Regional Engineer,

During the last few years the problem of adequately protecting terrace outlets at low cost has received a great deal of attention from agricultural engineers and agronomists throughout the United States. Terracing as an erosion-control practice has been employed quite generally in the South for a number of years, but the manner of terrace layout and construction or the lack of outlet protection has frequently rendered it ineffective. The recent establishment of demonstrational projects in all sections of the United States by the Soil Conservation Service has introduced terracing to thousands of farmers, and it seems likely that terraces will eventually be built on a large proportion of our agricultural lands, even though this will frequently necessitate a radical change in cultural practices. The scope of this problem makes it imperative that we develop types of terrace-outlet protection which are so practical and economical that they will be entirely adequate and yet may be established or built by the individual farmer with available labor and at his own expense.

It must be recognized that the problem of terrace outlet protection is neither universal in importance nor uniform in character among the various climatic, geographic, soil, and type of farming regions.

In consideration of the diversity of conditions encountered, it is obviously impossible to select a standard method of outlet control and attempt to apply it in all cases. Rather, we should determine in each case in what order the various types of outlet control should be given consideration, and what form of each type is best adapted locally and can be most economically established or constructed.

Individual Terrace Outlets

Where a well-sodded pasture or meadow, or an unburned and ungrazed woodland of moderate slope is available, I believe that individual outlets are the most effective and economical form of terrace run-off protection. In the case of Soil Conservation Service projects and camps, the time element presents one of the greatest difficulties in connection with this type of outlet control, for frequently there are available poorly sodded pastures, grazed woods, or areas newly retired from cultivation which might be well vegetated by seeding, sodding, fertilizing or planting, or by a combination of these methods, if one or two years might elapse before the construction of terraces. The short length of the working period of projects and camps makes this impracticable in many cases, and it is frequently necessary to resort to some more expensive form of outlet protection.

Although the emptying of terraces into a roadside or highway ditch is ordinarily to be avoided, if such a ditch is well stabilized and capable of carrying additional water without damage it is sometimes the only outlet that can be employed without excessive cost of protection at the other end of the terraces. If the drop from the terrace channel to the bottom of the ditch does not exceed a few feet, it has been found in the South that an earth flume on a 2:1 slope and solid sodded with Bermuda grass will provide adequate protection at low cost. Roadside ditches should be used as terrace outlets only by written agreement with the state or county agency concerned.

Individual terrace-outlet protection does not ordinarily involve any expense unless the construction of terraces is delayed pending the preparation of such outlets by the means previously mentioned. In such cases the cost should not exceed two dollars per terraced acre, and is usually considerably less. /1

### Collective Terrace Outlets

Meadow Outlet Strips. Narrow natural or prepared meadows (usually 100 feet or more in width) covering natural depressions or waterways afford effective and economical outlet protection for terrace systems. Such natural meadows already exist in many sections, and in other places may often be developed at relatively low cost in waterways now occupied by brush or gullies. This method not only affords protection for the terrace system, but makes effective use of areas which may now be unproductive. Many meadow outlet strips now in use have proved to be the most profitable acres on the farm. On project or camp areas the difficulty is again encountered of establishing such meadows sufficiently in advance of the construction of terraces. The species of grasses used will of course depend upon the geographical location and the climatic and soil characteristics. In many cases the use of channels may be avoided by the preparation of meadow strips, and this method of outlet control is especially feasible for the individual farmer. The cost of developing meadow strips should not exceed two to three dollars per terraced acre, and may be considerably less where terraces are not to be built immediately and auxiliary sodding is unnecessary. Where good sites are available and shaping up with equipment is unnecessary, the cost of meadow strip preparation in Region 4 has averaged as low as thirty-five cents an acre.

(Sodded and structurally protected channels will be discussed in the February issue.)

/1 It should be understood that costs given for this and succeeding methods are only approximate, and are intended to include the layout and supervision of all work, salary of all labor, cost of materials including seed and fertilizer, interest and depreciation on equipment, and all transportation of labor, supervisory personnel, materials and equipment.

## POINTERS ON TREE PLANTING

By

Homer C. Mitchell,  
Regional Forester.

Recent inspections of black locust plantations have disclosed three weaknesses in the past program of tree planting for erosion control which resulted in fairly high mortality. Much of the failure in planting black locust has been blamed on adverse weather, but the summer of 1936 was a severe test of planting practices, and some plantations were successful. It can now be said with confidence that, always provided soil is suitable and the actual setting of trees is carefully done, black locust planting on eroded sites will be successful if (1) the soil is well prepared, (2) vigorous seedlings are used, and (3) the trees are cultivated in the early part of the growing season.

Some project and camp foresters were not familiar with the Southern Forest Experiment Station results in planting eroded areas. Others, who had the information discounted it in favor of personal experience in re-foresting cut over non-eroded land. Our mistakes are now apparent.

Black locust should be planted only in well prepared soil wherever the site is severely eroded, except in rocky areas. Strong seedlings planted in unprepared soil last year failed to survive the drought.

A high percentage of cull stock has been planted with the thought that each year's planting program had to be completed then and the cull trees were considered better than none. The reverse is true. The weak trees having spindling roots and slender, weak tops have almost invariably failed, thus necessitating the expense of replanting. Height of black locust seedlings is not so important although the taller trees tend to do better. It is essential that they have strong radish-shaped roots. It is good economy to postpone planting until desirable stock can be had.

A few project foresters insisted upon the cooperators cultivating their black locust early in the summer, while others did not require cultivation or delayed it until after the crops were laid by.

There is little difference between late cultivation and no cultivation at all, while the effect of early cultivation on increasing survival and stimulating growth is outstanding. All projects and camps planting black locust or other hardwoods should plan for early cultivation next spring.

SEEIN' IS BELIEVIN'

By

D. O. Davis,  
Asst. Information Specialist.

Regardless of the "magic" of optical illusion as now carried out in electrical scientific research, it will no doubt continue to be correct that Fact and Truth will be received, accepted and remembered most effectively if seen through the human eye. Because the bulk of pleasure and learning is gathered by means of the eye, human beings are most interested in, most impressed by, and most receptive of that which they can see.

Constructed upon the same principle of the human eye the camera is recognized by science as the best means of record. There are several reasons. The film in the camera records all light which falls on it. Because it is unhampered by the strings of imagination, bias of mind, and defect of muscle which handicap human vision, the camera is absolutely candid in its presentation of the picture. With the duplication possible by means of reprints the camera does not say, "I saw", but says "Look". The camera goes even farther than the human eye for to it are perceptible colors which move with too short or too long a wave length to be caught by the eye. Thus the camera can "see" through some substances which are opaque to living sight.

The photograph is therefore of greatest interest and prime importance to the Soil Conservation Service, dealing especially with serious subjects wherein facts must be known, seen and recorded. Because of its close relationship to the human eye, with its positive presentation of "what is there" and since that "seen" by the camera can be seen over and over by a person, people accept the photograph without question. True, the photograph can be retouched - changed completely, but the person wishing to show actuality will never be guilty of any attempt to change the nature or meaning of a picture.

In work such as erosion control extending as it must over a period of years, if many are to receive the benefit from the work, mere written records wherein figures are shown will never complete the desired end no matter how accurate. "Figures don't lie" but "Seein' is believin'". We must strive at all times to record in a permanent way not alone the facts but the view. As each project or camp work area grows more nearly complete and the erosion control methods as applied begin to show definite results - greater need than ever is found for photographs of conditions long before the success of the work began to appear. It is much more difficult for a person to look over a well sodded, well managed pasture wherein there is no apparent erosion damage and visualize what it had been before control measures were applied than it is for that same person to use his imagination as he stands in the center of a badly eroded, ugly piece of ground as someone tells him what will be done and what will result, in controlling the erosion devastating the land under his feet.

Good photographs are more than record. They are more than history - they are time itself. A series of pictures showing step by step the work, the operation and the failure or success of any application of ideas conveys to the spectator a thing which he cannot otherwise grasp - the time spent in movement and growth.

The case of the individual photograph is equally important. In the past, and not at all unnaturally so, there has been a peculiar quality to photographs made on erosion control work. Uncensciously and perhaps consciously a photograph was taken so that it seemed to say to that person looking at it, "See - this we have done." In the future the photograph should say, "Look - this you can do." And - "Seeing will be believing."

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#### TAKE CARE OF YOUR BLACK LOCUST PLANTINGS

All forest plantings made in the planting season of 1935-1936 should be inspected and given pruning as needed.

This pruning should be done anytime between Christmas and this coming March, the procedure to follow is to prune back "brushy" growing trees and leave the main shoot unpruned. This pruning of side and competing shoots will tend to produce a single main stem which is most desirable for best fence post production. If needed, another pruning should be made about one month after the spring growth begins in order to keep back the competing shoots until the central and main shoot has gotten ahead.

After a central stem has developed, or on those trees which already have a main shoot, the side branches should not be pruned off higher than  $1/3$  the total height of the tree. Cutting all of the side branches off results in slow growth and crooked stems.

-- Project Tex-7, Nacogdoches, Texas.

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#### A RENTER SPEAKS

"I am a renter living on Mr. S. B. Hayter's farm on which he has signed a Cooperative Agreement with the Soil Conservation Service for five years.

"I think one of the best things that our government has ever done was establishing the Soil Conservation Service. I am proud I am living with a man who is interested in the work. Lets all do our part, work together and see this old land go to making us a better living."

/s/ W. R. Hughes,

-- Project Tex-7, Nacogdoches, Texas.

### MAKING PASTURES OUT OF GULLIES

One of the best demonstrations to date, in the Green Creek Watershed Project at Dublin, Texas, on plowing in and sodding gullies is now being done on the R. W. and J. M. Higginbotham farm about three miles north of Dublin on new highway 10.

This method of eliminating unsightly gullies and converting them into profitable grazing land is very simple and easy to do and requires only two men, a team and a turning plow.

This particular pasture is cut in the center by a large gully about eight feet deep and full of seeps. This gully was very crooked, had vertical banks and numerous feeder gullies coming into it from both sides, thereby making about one fourth of this pasture unfit for any use.

The first attack was on the small feeder gullies, which were from two to four feet deep. Two furrows were first plowed in right against the bank of the gully. This was accomplished by hooking a chain about two feet long into the end of the plow beam, which allows the team to walk safely away from the gully bank, at the same time the plow can be held so as to throw these two furrows into the gully. After a round or two in this manner, the double tree may be hooked directly into the beam, as the team now has a footing next to the gully. After the first two or three rounds, the process from then on is simply to continue plowing in until the banks are on a comparatively flat slope. The length of this slope should be about three times the depth of the gully.

After all the feeders were plowed in, work was started on the main gully in the same manner as described above. The feeders all being plowed in, no trouble was encountered in crossing them while working on this main gully.

After the gully was completely plowed in, it was sodded with chunks of Bermuda grass sod on about eighteen inch centers. This grass should be covered about one inch deep at this time of year for protection against freezing and by next summer should have these former unsightly series of gullies well covered and possible of being utilized for grazing instead of waste land.

The land on either side of this gully was producing only needle grass although it had been out of cultivation for a number of years. This land was contour ridged on fifteen foot centers to hold the run-off water out of the sloped and sodded gully and to conserve water for grass production. These ridges were sodded with Bermuda grass in order to get a desirable pasture grass established and to protect the ridges.

## USE THE ASSOCIATION MEMBERSHIP

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### How the Soil Conservation Association Can Function During 1937

At the Association meeting December 5 the following were set up as worthwhile activities for the coming year:

1. Members report observation of conservation work to newspaper.
  - a. To individuals who are interested.
2. Sponsor visits by nearby people.
  - a. Every man be familiar enough with the work on his farm to explain it. Sources of information: (1) Newsletters, (2) discussion with staff members, (3) the cooperative agreement.
3. Have committees to check over farms and make recommendations on maintenance of work. The following committees were suggested: (a) strip crops, (b) pasture, (c) temporary pasture, (d) field crops.
4. Report possibilities of improvements in the program to the Soil Conservation Service staff.
5. Lend assistance to those desiring a conservation program.

-- Project Tex-6, San Angelo, Texas.

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### SUGGEST THINGS FOR COOPERATORS TO DO

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Let us suggest a few of the things that should be done this month:

1. Prepare new meadow lands for seeding.
2. Secure wire, posts, and staples to be used in the construction of the new fences called for in the Agreement.
3. Be prepared to assist in marking off the strip crop lines on your farm.
4. Build up terrace ends as soon as the terracing equipment leaves your farm.
5. Make necessary preparation in pastures for sodding.
6. Work with the Service toward a better coordinated plan of work, and a better Cooperative spirit in accomplishing the work to be done, this month and the following months.

-- Project Ark-6, Waldron, Arkansas.

### MAINTAINING TERRACES BY PLOWING

It has been observed that the effective height of terraces can be maintained and even increased to a considerable extent by plowing in the proper manner. Since this is by far the cheapest and easiest method of terrace maintenance it is highly desirable that full advantage be taken of the opportunity thus offered.

If there is no strip crop now on the terraces it will be easy to give them two plowings by the next cropping season. To do this, they should be plowed up once now and again when the land is being prepared for planting. The rains between the two plowings should settle the ground so that the second plowing will be fully as effective as the first. The two plowings should increase the effective height of the terraces by at least three or four inches and should make good seed bed preparation easier.

The method used in plowing up terraces is very important. The three things desired are to increase the height of the terrace, maintain a well defined flow line on the upper side of the terrace and not form more channel than is necessary on the lower side of the terrace. To do this, it has been found that it is necessary to break the terrace and the ground next to it in three lands.

First back furrow on the center of the terrace ridge and continue plowing around the land thus started until you reach the flow line. Then start a land just above the terrace by a back furrow several feet above the flow line and parallel to it and continue plowing around this land until the flow line is reached. This will form a dead furrow on the flow line. Next start a new land by making a dead furrow several feet below the base of the terrace and parallel to it. Continue plowing around this land until you join the first land. The location of the dead furrow on the lower side and the back furrow on the upper side should be varied each time the ground is plowed by varying the width of these two lands.

A long wing terrace plow should be used, if possible. The Soil Conservation Service has these plows available to Cooperators upon request.

-- Project Ark-1, Conway, Arkansas.

### ADVANTAGE OF SIMPLE TOOLS

Small tools and simple equipment such as plows, grub hoes, axes, post hole diggers, and wagon teams, usually found on all farms can be the biggest aid in erosion control. All erosion control practices requiring mechanical means can be done by the farmer with his own tools. The performing of small jobs of erosion control ultimately leads to a unified large job of controlling erosion.

Gully control, one of the phases of this work, can be accomplished by the use of small tools and equipment. First, the banks of gullies can be sloped by hand, or with team and plow, and put in condition to sod, the sod being dug with at least four inches of soil from some convenient place in a pasture or field, loaded on a wagon, and hauled to the gullies to be treated. By digging holes with a mattox, approximately four inches square and four inches deep, and filling them with the sod the sloped banks can be easily sodded.

If small dams such as brush dams are required in the gullies, post and brush can be cut in the woods and hauled to the gully in a wagon and the dam constructed.

The relocation of fences requires only post hole diggers, wire stretchers, pliers, and wagon and team. Relocation of fences are sometime necessary in order to place steep and eroded land back into pasture and to maintain good erosion control practices.

Numerous other erosion control practices such as forest plantings, stand improvement, construction of contour ridges, pasture sodding, mowing of woods in pastures, and channel cleaning, can be accomplished with the farmer furnishing the man power and using the simple tools and equipment on the farm.

-- Project Ia-1, Minden, Louisiana.

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### REPAIRING TERRACE BREAKS

For adequate erosion control, it is essential that our Cooperators keep their terraces in a state of good repair for those severe winter rains.

One of the first things to do is to plow out the terrace channels. The severe rains of last week washed some portion of the terraces down into the channel. By plowing the soil uphill above the terrace channel and downhill on the terrace ridge, the terrace bed will be thrown higher and the channel deepened. In other words, plow an old time hillside ditch on the upper side of the terraces. Every effort should be exerted by the farmer in seeing that adequate work is done to those weak spots in order to insure against breakage.

Gophers are a serious menace to old and new terraces. Within the watershed area it will be the farmers job to poison this pest, and he certainly should make it his business to do so at the earliest date. During the past week over 4 inches of rain has fallen, and numerous terrace breaks are reported. Evidence shows that 79% of these breaks are caused directly by the gopher.

The farmer should go over each terrace on the farm, and when a break or weak place is found he should begin immediately to make repairs. To do this work inexpensively, fresnos, slips, plows, and teams should be employed.

-- Project La-6, Ruston, Louisiana.





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DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
REGION 4

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